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Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 11 February 10, 1961 Number 6

COOPERATIVE ECONOMIC INSECT REPORT

Highlights of Insect Conditions

PEA APHID populations building up in alfalfa in areas of California, Arizona and Oklahoma. Adults of EGYPTIAN ALFALFA WEEVIL more abundant than usual in Calipatria area of Imperial County, California; first larva of season observed. (p. 55).

SOUTHERN PINE BEETLE epidemic in areas of Eastern Shore of Virginia. Potential for 1961 spring infestations of concern. (p. 56) Map (p. 57).

Heavy numbers of COMMON CATTLE GRUB persist in cattle throughout Oklahoma and counts increased in cattle in Riley County, Kansas. CATTLE LICE continue to be most reported pest in Oklahoma for fourth straight week and infestations in cattle in several Utah counties severe in some herds. (p. 58).

New KHAPRA BEETLE infestation found in Yavapai County, Arizona. (p. 59).

HAWAIIAN INSECT NOTES. (p. 60).

INSECT DETECTION: Black citrus aphid reported for first time in Maryland (p. 56) and a tortricid (Cryptophlebia ombrodelta) reported for first time in Hawaii (p. 60).

Notes and pictorial key for separating khapra beetle (Trogoderma granarium) from all other Nearctic species of the genus. (pp. 61-62).

INSECTS not known to occur in the United States. (p. 63).

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Reports in this issue are for week ending February 3, unless otherwise indicated.

WEATHER BUREAU 30-DAY OUTLOOK

FEBRUARY 1961

The Weather Bureau's outlook for February calls for continued below-normal temperatures over the eastern third of the Nation, with greatest departures east of the Appalachians. Above-normal temperatures are predicted for the western half of the country, with greatest departures in the Northwest. In the intervening area, near-normal averages are anticipated. Precipitation is expected to exceed normal along the gulf and Atlantic coasts, with more snows for central and northern portions. Subnormal precipitation is indicated for the western half of the country except for near normal along the Pacific coast and in the southern tier of states. In unspecified areas near-normal amounts are also in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook, published twice a month by the Weather Bureau. You can subscribe through Superintendent of Documents, Washington 25, D. C. Price $4.80 a year, $2.40 a half year.

WEATHER OF THE WEEK ENDING FEBRUARY 6

Temperatures this week were generally 5° to 10° higher than last week west of the Appalachians, but remained 3° to 12° below normal in the Midcontinent region, and averaged 3° to 12° above normal in the Far West. Severe cold weather continued for the third consecutive week east of the Mississippi River, however, as temperatures for the week averaged 9° to 12° below normal in the Ohio Valley and 12° to 18° below normal in the Northeast. In parts of the Northeast, one of the most prolonged cold spells on record ended Sunday, February 5, when temperatures at some stations rose above the freezing level for the first time since January 18. Subzero temperatures were recorded on most nights in much of the Northeast. Layton, New Jersey, had a low of -22° on Thursday, the 2d, and Atlantic City, New Jersey, had a maximum temperature of 0° on the 4th. In New England, deep frost penetration in places with only a light snow cover has already frozen many water mains.

The Northeast also experienced its third major snowstorm of the season on February 3 and 4. The storm left a coating of glaze in large areas of the Southeast that forced many schools to close in Georgia and South Carolina. Heavy snow fell in West Virginia and the Coastal States from Virginia to central New England. Over 8 inches fell in Washington, D. C. Falls of 10 to 20 inches were measured in much of Pennsylvania, and 1 to over 2 feet in much of southern and central portions of New England and New York State. Strong winds produced high drifts, 10 feet high in places, which greatly hampered traffic in New York City and other urban centers. Heavy snow was already on the ground in many areas before the latest storm, and depths now range up to 55 inches in the hills of Litchfield County, Connecticut, and up to about 40 inches over Worcester County, Massachusetts. In some sections of southeastern New England, wires and cables were broken by a heavy coating of ice. This storm produced most of the week's precipitation in the East, with moisture ranging from 1/2 to 1 inch or more from eastern North Carolina northward to central New England, and over 1/2 inch in western portions of Kentucky and Tennessee, and northern portions of Alabama and Mississippi. Another storm formed in the northern Gulf of Mexico over the weekend and produced up to 2 inches of moisture in eastern Texas, and 5 to 10 inches of snow in the eastern portion of the Panhandle. On the 6th, minor flooding was reported in the Coastal Plains. The storm also produced several inches of snow in parts of Kansas, western Oklahoma and southeastern Colorado. Precipitation in the Far West was in excess of 1/2 inch in the Pacific Northwest and much of the northern half of California. In Idaho, 0.20 to 0.80 inch of moisture, and up to 2.00 inches in some higher valleys, was the first substantial precipitation in much of the State for several weeks. Some precipitation also fell in northern Wyoming and parts of the central Great Basin, but in the latter area where the previous month was among the driest Januarys on record, the water outlook remains grim. (Summary supplied by U. S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (*Toxoptera graminum*) - OKLAHOMA - Although populations generally light, up to 10 per linear foot, a gradual overall buildup continued in most areas of State. Isolated infestations in southwest, west central and central areas continued at moderate levels, 25-150 per linear foot, and present potential "hot spots" particularly where plants are in poor growing condition. (Okla. Coop. Sur.). TEXAS - Infestations continue very light to light in all areas from which reports have been received. Cold, wet weather in all areas probably helped hold populations down. (Newton). ARKANSAS - None found in northwest area. (Ark. Ins. Sur.).

ENGLISH GRAIN APHID (*Macrosiphum granarium*) - OKLAHOMA - Common in increasing numbers in fields of small grain throughout western two-thirds of State. Counts continued to range from occasional to 50 per linear foot. Winged forms noted in a high percentage of fields surveyed. (Okla. Coop. Sur.). ARKANSAS - Counts lower than 2 weeks ago with an occasional aphid found in northwest area. (Ark. Ins. Sur.).

APPLE GRAIN APHID (*Rhopalosiphum fitchii*) - OKLAHOMA - Becoming increasingly common in fields of small grain throughout State. Counts range 5-10 per linear foot in infested fields. (Okla. Coop. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - OKLAHOMA - Very light, up to 5 per linear foot, in small percentage of fields of small grain surveyed throughout State. (Okla. Coop. Sur.).

CUTWORMS - OKLAHOMA - Several species common in light numbers in fields of small grain and alfalfa in western half of State. (Okla. Coop. Sur.).

WINTER GRAIN MITE (*Penthaleus major*) - TEXAS - Infestations continue very light to light in all areas from which reports have been received. Cold, wet weather probably helped to hold populations down. (Newton).

PEA APHID (*Macrosiphum pisi*) - CALIFORNIA - Light infestations generally on alfalfa in Imperial Valley, Imperial County. Populations gradually building up. (V. Roth). ARIZONA - Infestations increasing slowly in central area alfalfa and average 30 per 10 sweeps in many fields. (Ariz. Coop. Sur.). OKLAHOMA - Common in limited numbers, 3-15 per square foot, in alfalfa throughout State. Populations showed some increase in south central area; counts in other areas continued constant. (Okla. Coop. Sur.). ARKANSAS - Counts 0-15 per square foot in vetch in northwest area. (Ark. Ins. Sur.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - ARIZONA - Infestations have shown a slight increase in central area alfalfa but remain generally low. Counts in some fields average 20 per 10 sweeps. (Ariz. Coop. Sur.). OKLAHOMA - Present in limited numbers, up to 5 per square foot, in approximately one-half of alfalfa checked in State. (Okla. Coop. Sur.).

TARNISHED PLANT BUG (*Lygus lineolaris*) - ARKANSAS - Present in taller small grains; counts lower than 2 weeks ago in northwest area. (Ark. Ins. Sur.).

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - CALIFORNIA - First larva of season found on growing tips of alfalfa in Calipatria area of Imperial County. Adults more abundant this season than usual. (V. Roth).

FRUIT INSECTS

COCCIDS - CALIFORNIA - Coccus pseudomagnoliarum heavy on citrus species generally in Fowler, Fresno County; Aonidiella aurantii heavy on citrus, euonymus, roses and mulberry in Delano, Kern County; Lepidosaphes ficus heavy on yard fig trees in McFarland, Kern County; and Parlatoria oleae heavy on peach locally in Poway, San Diego County. (Cal. Coop. Rpt.).

A ROOT MITE (Schwiebea sp.) - CALIFORNIA - Heavy adult populations on grape roots in Modesto, Stanislaus County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

CABBAGE APHID (Brevicoryne brassicae) - GEORGIA - Light infestations on cabbage in Colquitt, Lowndes, Thomas and Grady Counties. (Johnson).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Heavy, local infestation in roots of turnips in Thomas County. (Miller).

TOBACCO INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Light infestations on tobacco in the plant bed in Ware, Atkinson, Tift, Colquitt, Cook, Lowndes, Brooks, Thomas and Grady Counties. (Johnson).

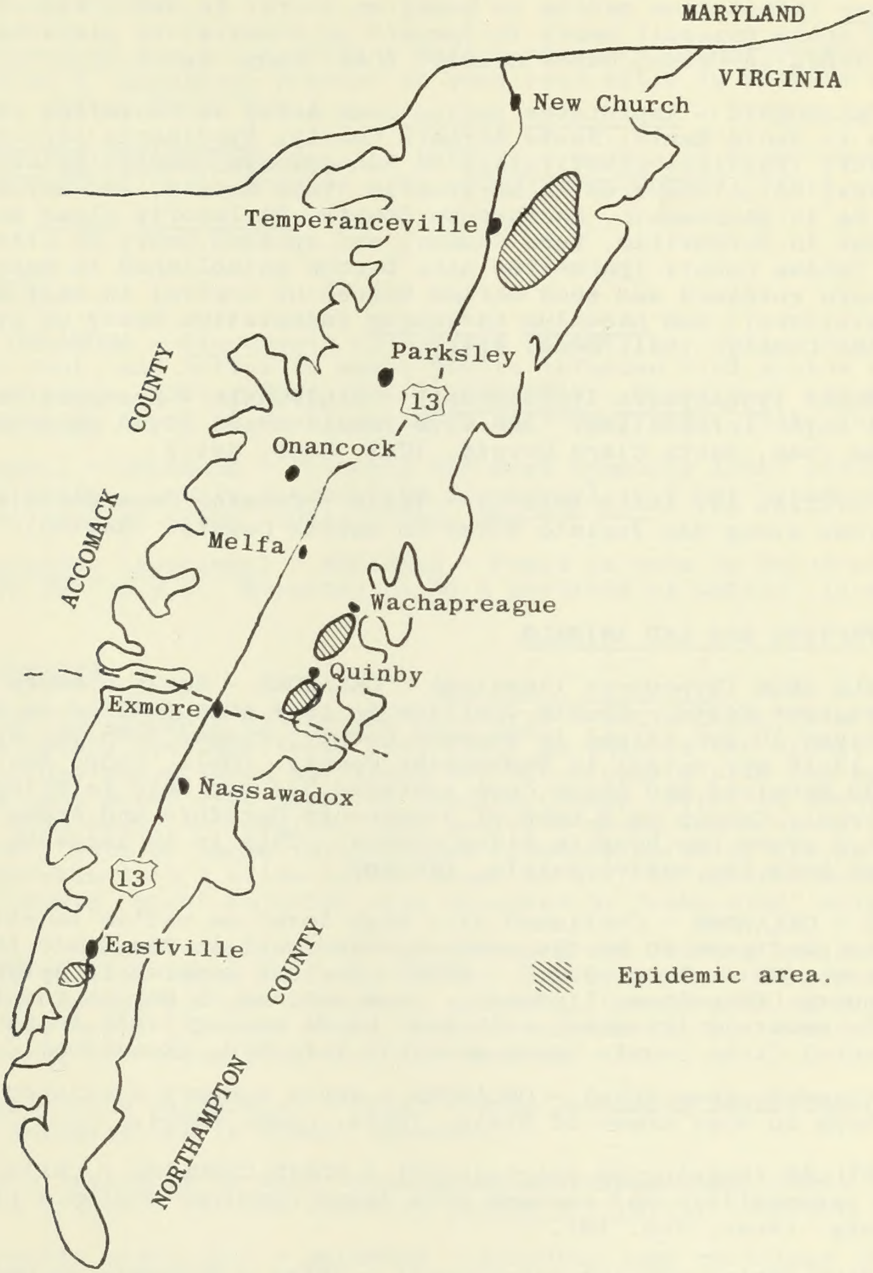
TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Light infestations on tobacco in the plant bed in Ware, Tift, Colquitt, Cook, Lowndes, Brooks, Thomas and Grady Counties. (Johnson).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - VIRGINIA - A 7-hour aerial survey to determine current damage, extent and distribution of southern pine beetle kills in the 2 Eastern Shore counties of Northampton and Accomack was conducted on January 10-11. Two heavily infested areas - and hence the locus of future trouble - were noted in Accomack County. The major one lay east of Temperenceville and a second smaller epidemic was located just south of Wachapreague. Elsewhere in both counties, a fair number of single or double red-topped trees were in evidence, but no other immediate danger areas were noted except possibly in the area just south of Eastville in Northampton County. Here several spots of 20-25 dead pines were observed. See map on page 57. In addition to the damage noted in the survey above, a number of single red-tops and few larger areas (20-30 trees) were noted due west of West Point in the Pamunkey River drainage, New Kent and King William Counties, and due east and in immediate vicinity to Bottoms Bridge, New Kent County. In the two-county area on the Eastern Shore, a total of 2,250 dead trees were observed, with an estimated loss of 587,000 board feet valued at 17,600 dollars. The loss was based on an average tree of 16-inch diameter, containing 3½ logs at 30 dollars per 1,000 board feet. Although the loss of slightly over one-half million board feet is substantial, a greater danger lies in the potential buildup of the infestation in the spring of 1961. (C.L. Morris).

BLACK CITRUS APHID (Toxoptera aurantii) - MARYLAND - Collected from English holly by W. T. Johnson on August 23, 1960, at Centreville, Det. by L. M. Russell. This is a new State record. They were a probable introduction on nursery stock. It is not known if T. aurantii can overwinter in Maryland. (U. Md., Ent. Dept.).

BARK BEETLE SURVEY - EASTERN SHORE, VIRGINIA, JANUARY 1961



(See writeup of Southern pine beetle on page 56)

APHIDS - OKLAHOMA - Moderate to heavy infestations common on arborvitae in central area. (Okla. Coop. Sur.). ARIZONA - Light to medium infestations attacking new growth of rose bushes as it appears in central area. (Ariz. Coop. Sur.). CALIFORNIA - *Cerataphis* sp. heavy on MacArthur clusterpalm (*Actinophloeus macarthuri*) in a nursery property in South Gate, Los Angeles County; *Thoracaphis umbellulariae* infestation medium to heavy on laurel in Santa Paula, Ventura County; and *Aphis gossypii* heavy in January on mount-atlas pistache (*Pistacia atlantica*) trees in Chico, Butte County. (Cal. Coop. Rpt.).

COCCIDS - CALIFORNIA - *Aspidiotus perniciosus* heavy on flowering plum in new subdivision in Santa Maria, Santa Barbara County; *Epidiaspis piricola* heavy on Christmasberry (*Photinia arbutifolia*) in San Joaquin County; *Asterolecanium arabidis* heavy on pittosporum in Marysville, Yuba County, and severely damaged oaks in parks in Sacramento, Sacramento County; *Parlatoria oleae* infestation medium on ash in Marysville, Yuba County, and spotted heavy on olives in Richfield, Tehama County (parasites have become established in many localities in State where released and show marked degree of control in many previously heavy infestations); and *Lecanium cerasorum* infestation heavy on pyracantha in Dixon, Solano County. (Cal. Coop. Rpt.).

TULIPTREE SCALE (*Toumeyella liriodendri*) - CALIFORNIA - Eradication treatment has reduced the major infestation. One live female scale found on post-treatment check in San Jose, Santa Clara County. (Cal. Coop. Rpt.).

TEXAS LEAF-CUTTING ANT (*Atta texana*) - TEXAS - Causing considerable damage to seedling pines along San Jacinto River in Harris County. (Newton).

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Heavy numbers persist in cattle throughout State. Counts continue to show some decline in most areas. Counts averaged 10 per animal in Wagoner County, ranged 3-26 per animal in Payne County and 12-16 per animal in Pushmataha County. (Okla. Coop. Sur.). KANSAS - Counts on 25 Hereford and Angus cows averaged 3.4 per head in Riley County, northeast area. Counts on 8 head of 2-year-old Hereford and Angus heifers averaged 41.5 grubs per head in Riley County. This is an increase in number of grubs per head for native cattle. (Knapp).

CATTLE LICE - OKLAHOMA - Continued at a high level on cattle in all areas of State. This continued to be the most reported pest in the State for the fourth straight week. (Okla. Coop. Sur.). UTAH - Serious problem in untreated herds in Garfield County. (Knowlton, Lindsay). Less serious in Morgan County than normal; some animals severely infested, with most herds having light to moderate infestations. Several Cache County herds severely infested. (Knowlton).

HOG LOUSE (*Haematopinus suis*) - OKLAHOMA - Heavy numbers continued common on untreated hogs in most areas of State. (Okla. Coop. Sur.).

PUSS CATERPILLAR (*Megalopyge opercularis*) - NORTH CAROLINA - Child playing around tree where caterpillars and cocoons were found required doctor's attention in Yadkin County. (Wray, Jan. 18).

BROWN DOG TICK (*Rhipicephalus sanguineus*) - TEXAS - Moderate to heavy infestations on dogs in Brazos County, with several reports of infestations in homes. (Newton).

STORED-PRODUCT INSECTS

KHAPRA BEETLE (*Trogoderma granarium*) - ARIZONA - One new infestation discovered 2 miles south of Camp Verde in Yavapai County. Two new infestations presently being treated in Yuma area of Yuma County. These are only known infestations in State. (Ariz. Coop. Sur.).

DERMESTIDS (*Trogoderma* spp.) - ARIZONA - Medium to heavy populations of several species other than *T. granarium* present in some feed mills in Phoenix area of Maricopa County. (Ariz. Coop. Sur.).

RED FLOUR BEETLE (*Tribolium castaneum*) - ARIZONA - Medium to heavy populations present in some feed mills in Phoenix area of Maricopa County. (Ariz. Coop. Sur.).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - *Hippodamia convergens* present in limited numbers, trace to 2 per linear foot, and active in small grains infested with aphids in central and west central areas. (Okla. Coop. Sur.). ARKANSAS - Occasional adult of *Coleomegilla maculata* found in small grain in northwest area. (Ark. Ins. Sur.).

NABIDS (*Nabis* spp.) - OKLAHOMA - Probably the most commonly found predator in fields of small grain. Counts ranged from occasional to 2 per linear foot in central and west central areas. (Okla. Coop. Sur.).

A SPIDER (*Tetragnatha laboriosa*) - ARKANSAS - Found in oats on University of Arkansas farm on February 1. Reported to be a predator of aphids. (Ark. Ins.Sur.).

MISCELLANEOUS INSECTS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - NORTH CAROLINA - Infestations in Craven County continue to be very light in density and widely scattered. Frequently, only one mound found per field and occasionally only one per farm. The area around only mound ever found in Pamlico County (detected about one year ago) surveyed, with negative results. One positive mound found about 4 miles east of old site. Both of these infestations directly north of Craven County infestation; approximately 5 miles across Neuse River. Of several mounds broken into in Craven County, great majority were occupied by "take-over" ants.(Branan).

A SCARAB (*Cotinis texana*) - CALIFORNIA - Numerous grubs feeding and burrowing under rabbit and chicken cages in Chino Valley, San Bernardino County, south of Ontario. As many as 8 grubs per shovelful counted. Damage consisted primarily of undermining the soil. In some cases, rabbit hutches tilted over on their sides, due to heavy burrowing of grubs. (L. Keenan).

PHARAOH ANT (*Monomorium pharaonis*) - TEXAS - Many residents in Brazos County concerned with infestations in homes. (Newton).

EARWIGS - TEXAS - Residents in many areas still concerned, with latest report coming from Port Arthur. Species probably *Labidura riparia*. (Newton).

CLOVER MITE (*Bryobia praetiosa*) - OKLAHOMA - Invading some buildings in annoying numbers in east central area. (Okla. Coop. Sur.). UTAH - Entering some homes in Box Elder County. (Knowlton). CALIFORNIA - Heavy adult populations invading a house in Calix, Santa Barbara County. (Cal. Coop. Rpt.).

LIGHT TRAP COLLECTIONS

	Pseudaletia unipuncta	Feltia subterranea	Peridroma saucia	Prodenia ornithogalli	Spodoptera exigua
ARIZONA					
Mesa 1/21-27			8	12	38
FLORIDA					
Homestead 1/24	2	7			

HAWAIIAN INSECT NOTES

The following reports were submitted by the Hawaiian Entomological Society for use in the Cooperative Economic Insect Report. The reports were abstracted from the "Notes and Exhibitions" in the minutes of the January 9, 1961, meeting.

A TORTRICID (Cryptophlebia ombrodelta (Lower)) was determined by Dr. R. Namba from specimens reared by C. J. Davis from common seagrape (Coccolobis uvifera) and terminal twigs of a ferntree (Filicium decipiens) collected at Waialae-Kahala, Oahu, in August 1960. Specimens were first thought to be C. illepida (Butler). C. ombrodelta also occurs on Guam where Dr. Swezey reared it from seeds of several leguminous trees, Delonix regia, Adenanthera pavonina and Pithecellobium dulce. This is the first record for Hawaii. (C. J. Davis). C. ombrodelta was apparently established in Hawaii as early as late 1958, but was previously confused with C. illepida which is apparently native to Hawaii. Specimens from HSPA light traps operated during September and October 1958 proved to be C. ombrodelta when the male genitalia were examined. In India, litchi fruits are reported to be a favorite host of C. ombrodelta. Its presence in Hawaii during the past two years may explain the increase in damage to litchi fruit attributed to C. illepida reported during 1960. (J. W. Beardsley).

On a recent lantana survey in the Kau district, Hawaii, 56 pupae of Catabena esula, a noctuid predator of the noxious weed lantana, were picked up in 10 minutes at Kukui paddock, Kapapala Ranch. C. esula was introduced from California in 1955 and is becoming increasingly abundant in some localities. It has been recovered on all islands of Hawaii, except Kauai, and appears to build up between the months of December and March. (H. Nakao).

A BRACONID (Aphidius smithi), a parasite of pea aphid, was found established in an alfalfafield at Ewa, Oahu, during late December 1960. Shipments of A. smithi, obtained by the HSPA Experiment Station through the courtesy of the University of California Department of Biological Control, were liberated at Ewa and Kekaha, Kauai, during October and November 1960. (J. W. Beardsley).

A MEALYBUG (Pseudococcus neobrevipes) was found in large numbers on aerial roots of banyan fig (Ficus benghalensis) in the Pawaa district of Honolulu on January 15. Det. by H. Morrison. This species was not previously listed from this tree. Larvae of a LOOPER (Plusia chalcites) were observed feeding extensively on leaves of Pluchea odorata in Waikiki, Honolulu, on January 2. This is a new host record. (Krauss).

NOTES AND PICTORIAL KEY FOR SEPARATING KHAPRA BEETLE (TROGODERMA GRANARIUM) LARVAE FROM ALL OTHER NEARCTIC SPECIES OF THE GENUS

The accompanying pictorial key has been prepared in response to numerous requests for a method of rapidly distinguishing larvae of the khapra beetle (*Trogoderma granarium* Everts) from larvae of all other Nearctic species of the genus.

Mature unabraded and relaxed larvae are necessary for the dissection and study required to use the key effectively. Specimens preserved in 70 percent ethyl alcohol are best. Isopropyl alcohol is sometimes unsatisfactory.

Observations of the antennal setae and antecostal suture should be made with a magnification of approximately 45 diameters. The antennae should be extended for study by pressing on the thoracic region with the head of an insect pin or similar object. The resultant pressure forces the body fluids into the head capsule and extends the antennae.

For counting the papillae in the distal sensory cup of the epipharynx, a compound microscope with a magnification of approximately 440 diameters is recommended. The labrum must be dissected from the head capsule and turned ventral side up, placed on a slide in glycerine or in a permanent mountant, covered with a cover-slip and examined. If the papillae are not sufficiently clear, warming the slide slightly may improve visibility.

Occasionally the distal sensory cup is separated into two or three parts. If this condition exists, the total number of papillae will still be the same as given in the pictorial key.

All known *Trogoderma* larvae have six papillae in the distal sensory cup except the khapra beetle, *Trogoderma granarium* Everts, and *Trogoderma glabrum* (Herbst). These two species have four papillae in the distal sensory cup. Characters used in the pictorial key will separate *granarium* from *glabrum*.

The clumps of hastisetae on the seventh and eighth abdominal terga must first be removed to find whether the antecostal suture is present. This is easily accomplished by rubbing or gently scraping loose the hastisetae with an insect pin or similar object. After the hastisetae are removed, the posterior abdominal segments should be extended by gently applying pressure to the middle of the abdomen. This is necessary so that the intersegmental fold is not mistaken for the antecostal suture.

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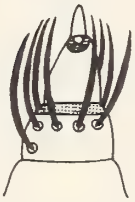
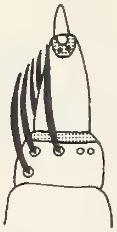
Entomology Research Division
U. S. Department of Agriculture

PICTORIAL KEY FOR SEPARATING KHAPRA BEETLE (TROGODERMA GRANARIUM) LARVAE FROM ALL OTHER NEARCTIC SPECIES OF THE GENUS

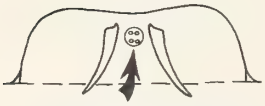
setae of basal antennal segment almost completely encircling segment & extending to apex of second segment or beyond



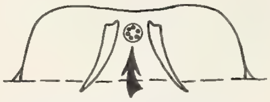


setae of basal antennal segment bunched on mesal side, not encircling & not attaining apex of second segment

Trogoderma spp. (NOT *granarium*)

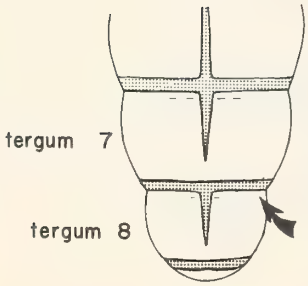


distal sensory cup with four papillae



distal sensory cup with six papillae

Trogoderma spp. (NOT *granarium*)



terga uniformly creamy yellow to light brown

antecostal suture absent or feebly indicated on 8th abdominal tergum

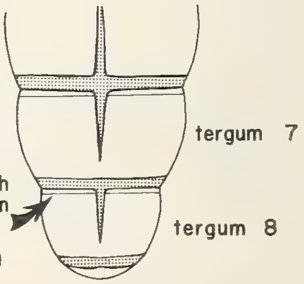
(setae removed)

Trogoderma granarium Everts

terga dark gray

antecostal suture present, well developed on 8th abdominal tergum

(setae removed)



Trogoderma glabrum (Herbst)

INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

A POPLAR CLEAR WING (Paranthrene tabaniformis Rott.)

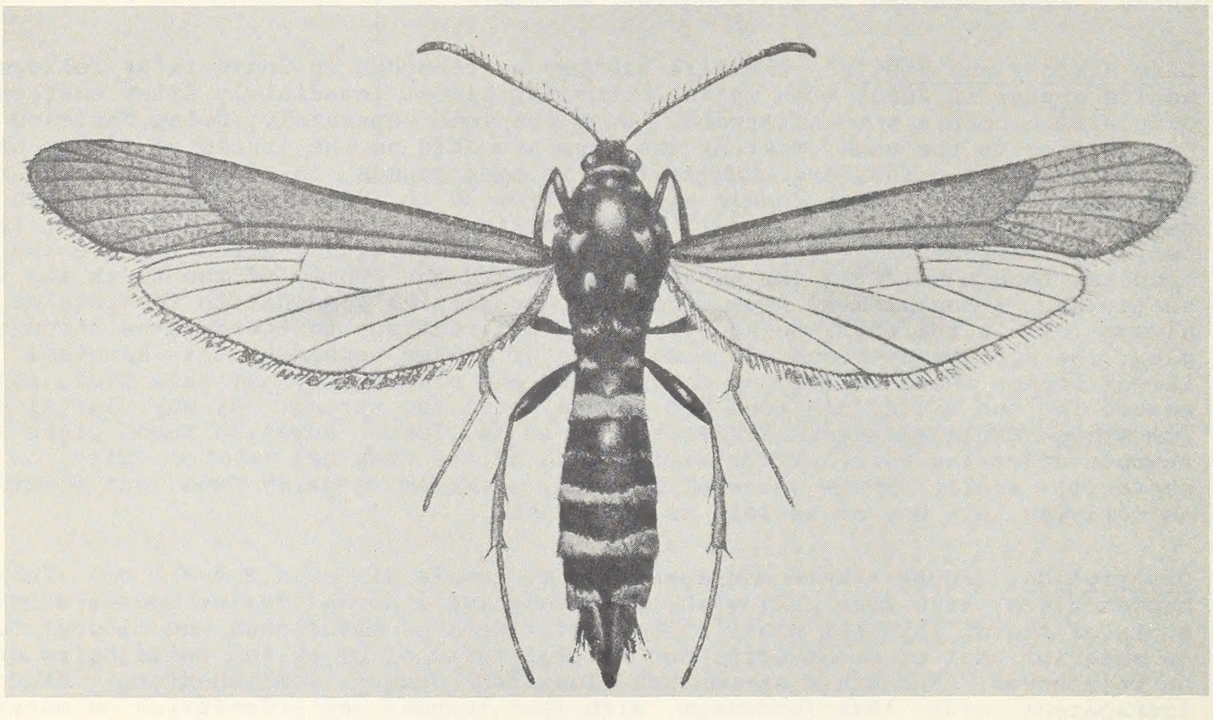
Economic Importance: This aegeriid is one of the more important pests of poplar and several other hardwood trees in areas of Europe. Damage to nursery trees and young forests can be severe. Galleries made by the larvae in young trees can weaken the limbs and cause them to be easily broken off by wind; galleries in older trees can make the wood unsuitable for use or depreciate its value considerably. Thickened areas are formed at points of entry of the larvae on slender trunks and branches, and in the vicinity of the larval galleries, the wood appears reddish-brown. The larval entrance holes also offer suitable sites for the entry and establishment of fungi and bacteria. The insect was first recorded in North America at St. John's, Newfoundland, Canada, in 1954.

Hosts: Recorded on poplar, alder, willow, birch and hawthorn.

Distribution: Occurs throughout central and southern Europe and extends to China. Also recorded in Newfoundland, Canada.

Life History and Habits: The life history as recorded in Spain is as follows: Adults appear in June, with mating occurring almost immediately after emergence. Oviposition occurs soon afterward. Eggs are laid separately, being fastened by one surface to the bark. Most of the eggs are laid on the trunks of trees; others on the branches. They are usually laid in bark wounds, in scar tissues and cracks and rugose places. Each female will lay from 50 to 100 eggs. Eggs hatch in 10-12 days. A young larva feeds first on the cortical tissues after penetrating the bark. It remains there for some time, making an irregular chamber above the cambium, then penetrates the wood, first toward the center of the trunk and then ascending. A conspicuous plug of debris, projecting somewhat to the outside, is always left in the entrance hole. Sap with a reddish tint percolates through the plug, the appearance being characteristic of damage caused by this species. Larvae become about half-grown towards the end of October. At this time, activity ceases for the winter and does not resume until the spring. By May, larval development is completed and galleries are 10-14 cm. long. Pupation takes place in a chamber under the bark, either at the site of the original point of entry, or just above it. Adults emerge in about 20 days, normally in early June, but sometimes as early as late May or as late as late June.

Description: ADULT - Male wingspan 2-3 cm; female wingspan 2.5-3.5 cm. Thorax bluish-black, with fine yellowish pubescence and 4 dorsal yellow spots; dorsal spots of thorax farthest apart on posterior part of mesothorax and closest together on anterior part of metathorax; two lateral tufts of black and white hairs present on metathorax. Forewings narrow and elongated; opaque, reddish-brown. Hind wings transparent, wider than forewings, with apex rounded and indentation on margin at termination of next-to-last visible vein. Forelegs with coxae bluish-black; femorae black with yellow apex; tibiae yellow, black on base. Middle and hind legs with yellow coxae; femorae bluish-black, spotted with yellow toward apex; tibiae yellow, black on base, with yellow spur. Tarsi of all legs yellow; beardless, with spinules below. Abdomen bluish-black, with all segments bordered posteriorly by yellow fringe; first abdominal segment interrupted, dorsally forming 2 spots analogous to those of metathorax and ventrally forming a single central yellow spot; last abdominal segment yellow, with a narrow median black line. Anal tuft yellow; mixed with black hairs in male and with a black median line in female. Antennae of male bipectinate 5/6 of its length; upper part with smooth yellow scales terminated by an imperceptible brush of hairs. Antennae of female simple and smooth, dilated near apex. LARVA - Young larvae hyaline-white, about 3 mm. in length and bear inconspicuous hairs as long as diameter of body. Mature larvae 24 mm. long, 4-5 mm. wide; head ocherous, front in form of a narrow wedge; antennae 3-segmented; body ivory colored; prothorax somewhat wider than remaining segments, with dorsum yellowish marked by 2 brown furrows, which converge caudad; last abdominal segment pale yellow above, with 2 characteristic hooks; thoracic legs yellowish-brown; parapodia with fine row of chestnut hooks in form of a convergent double arc on each parapodium, except last one, which has a single arc. PUPA - Light yellowish-brown; head and thorax darker. Two rows of stiff spines on abdominal segments; single row on dorsum, except for segments 8 and 9, and segment 7 in female, which have 2 each. Terminal end of last abdominal segment bears 2 sclerotized arcs with 5 teeth each. EGG - Ellipsoidal, flattened, somewhat depressed on 2 surfaces; 0.9 mm. long, and 0.4 mm. thick. Color dull black. Polygonal reticulation present on surface. (Prepared in Survey and Detection Operations in cooperation with other ARS Agencies, U. S. Forest Service and the U. S. National Museum). CEIR 11(6):2-10-61.



Male of Paranthrene tabaniformis Rott.

Major reference: Ministerio de Agricultura, Servicio de Plagas Forestales. 1960. Principales Insectos que Atackan a las Frondosas en Espana. 143 pp., Madrid. (Includes illustration of adult).

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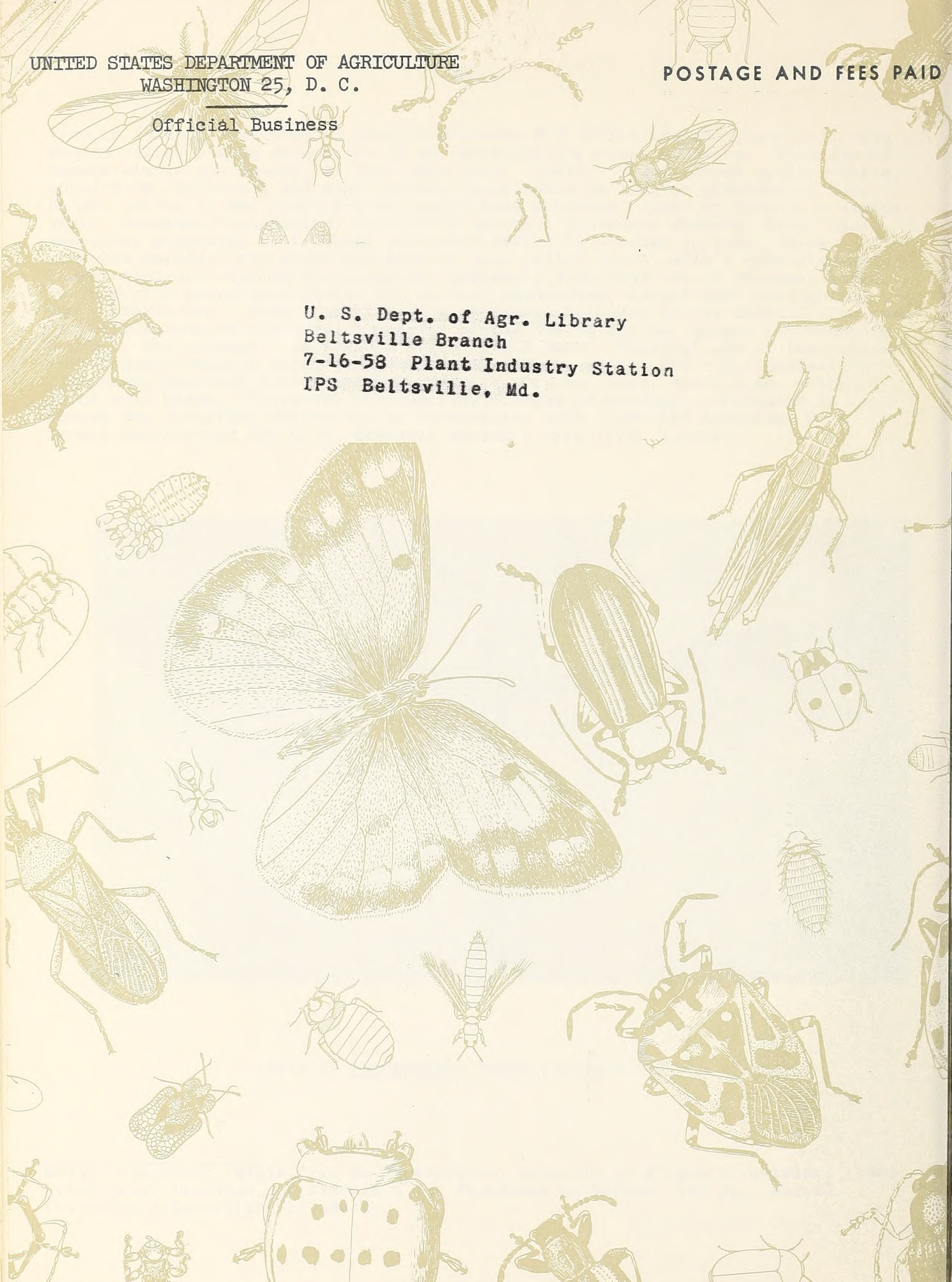

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